

July 27, 2016

EX PARTE PRESENTATION

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Ex Parte Presentation in *Petition for Rulemaking to Permit MVDDS Use of the 12.2-12.7 GHz Band for Two-Way Mobile Broadband Service*, RM-11768; *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, GN Docket No. 14-177; *WorldVu Satellites Limited, Petition for a Declaratory Ruling Granting Access to the U.S. Market for the OneWeb System*, IBFS File No. SAT-LOI-20160428-00041

Dear Ms. Dortch:

Pursuant to Section 1.1206 of the Commission's rules, 47 C.F.R. § 1.1206, the MVDDS 5G Coalition (the "Coalition") submits this letter summarizing a meeting on July 25, 2016 with the following members of the Broadband Division of the Wireless Telecommunications Bureau: Blaise Scinto, Peter Daronco, Madelaine Maior, and Stephen Zak (by telephone). Present on behalf of the Coalition were: Jeff Blum, DISH; Mariam Sorond, DISH; John Kim, DISH; Alison Minea, DISH; Hadass Kogan, DISH; Bruce Fox, Go Long Wireless; Aaron Shanis, counsel for Go Long Wireless; Tim Meyer, Go Long Wireless (by telephone); Tom Peters, Hogan Lovells; Kirk Kirkpatrick, MDS Operations, Inc. (by telephone); David Charles, Satellite Receivers, Ltd. (by telephone); Stephen Díaz Gavin, Vision Broadband; and Isaac Lidsky, Vision Broadband (by telephone).

During the meeting, the Coalition distributed the attached presentation and discussed its Petition for Rulemaking ("Petition") to permit the use of Multichannel Video Distribution and Data Service ("MVDDS") spectrum in the 12.2-12.7 GHz band for a two-way mobile broadband Fifth Generation ("5G") service.¹ By initiating a rulemaking on the Petition, the public will have the opportunity to participate and enable the Commission to unleash the MVDDS band for next-generation 5G mobile uses for the benefit of consumers, while, at the same time, protecting DBS operations and leaving ample spectrum available for future non-geostationary satellite orbit ("NGSO") fixed-satellite service ("FSS").

- **Advancing the Administration's Mobile Broadband Spectrum Goals**

In particular, the Coalition urged the Commission to issue a notice of proposed rulemaking as soon as possible for the 12.2-12.7 GHz band. Adopting a rulemaking consistent with the Petition will advance the government's goal of identifying and rapidly making available additional 5G mobile spectrum. The 12.2-12.7 GHz band offers 500 MHz of contiguous,

¹ See Petition of MVDDS 5G Coalition Petition for Rulemaking, RM- 11768, April 26, 2016. See also *Petition for Rulemakings Filed*, Public Notice, Report No. 3042 (May 9, 2016).

underutilized MVDDS spectrum that is ideally suited for 5G deployments. Granting additional MVDDS flexibility as proposed in the Petition will advance the government’s broadband goals and provide substantial benefits for the public.

Since June 2010, the President has called on both the Commission and the National Telecommunications and Information Administration (“NTIA”) to make 500 MHz of spectrum available for broadband use by 2020.² Although the Commission has taken important steps in the *Spectrum Frontiers* proceeding to advance that goal, additional high frequency spectrum will be required if consumers are to realize the full benefits of 5G. The 12.2-12.7 GHz band can help fill that gap. Adopting rule changes consistent with the Petition will result in enhanced DBS/MVDDS spectrum sharing, freeing up 12.2-12.7 GHz for more efficient and productive mobile broadband use while still providing protection to DBS.

- **The Coalition’s Proposal Will Protect DBS Operations**

The Coalition also reviewed key findings from its two technical reports, “MVDDS 12.2-12.7 GHz Co-Primary Service Coexistence” (“Co-Existence Study I”) and “MVDDS 12.2-12.7 GHz Co-Primary Service Coexistence II” (“Co-Existence Study II”) prepared by Tom Peters, former Chief Engineer of the Commission’s Wireless Telecommunications Bureau.³ Both studies found, among other things, that “coexistence between MVDDS 5G operations and DBS receivers is possible with modest adjustments to MVDDS site locations and radiofrequency design parameters.”⁴ And they also establish that “coexistence between MVDDS 5G operations and NGSO FSS operations is not possible without severe operational constraints on MVDDS, NGSO FSS or both services.”⁵

The Coalition proposes retention of MVDDS effective power flux density (“EPFD”) limits as the mechanism for protection of DBS. The framework for protection of DBS thus remains unchanged, and the introduction of two-way services will not change this framework – DBS will continue to be protected by the EPFD metric for both base stations and mobiles. Through the use of current-generation technologies, application of newly available spectrum planning tools, and careful engineering of MVDDS systems, fixed and mobile 5G MVDDS deployments will be possible while meeting EPFD limits.

- **NGSO and MVDDS Services Co-Existence Is Challenged Even Under the Current Rules**

The Coalition also expressed concern that the company now known as OneWeb has applied to seek access to the 12.2-12.7 GHz band in the United States. In the filing it recently

² See Presidential Memorandum, Unleashing the Wireless Broadband Revolution, 75 Fed. Reg. 38387 (July 1, 2010).

³ See MVDDS 5G Coalition Comments, Attachment I, RM-11768, June 8, 2016 (“Coalition PN Comments”). See also MVDDS 5G Coalition Comments, Attachment A, RM-11768, June 23, 2016.

⁴ Co-Existence Study I at 35.

⁵ *Id.*

submitted to the Commission, OneWeb said it envisions its U.K.-based NGSO FSS system would support mobile end-user devices despite the lack of a mobile-satellite service (“MSS”) allocation in the 12.2-12.7 GHz band.⁶

The Coalition explained that even under the current rules, co-existence between co-primary terrestrial MVDDS and NGSO systems serving mobile devices will prove very difficult, if not impossible and, in any case, remains inconsistent with the current Part 101 rules. The Part 101 rules establish different priorities based on the timing of deployment. If NGSO systems were deployed prior to MVDDS, Section 101.129(b) would require a 10 kilometer exclusion zone around each qualified NGSO earth station, which would mean that an NGSO system purporting to offer mobile coverage throughout the United States would effectively require a nationwide exclusion zone for MVDDS.

Conversely, NGSO operations will be constrained by the power flux density (“PFD”) protections to MVDDS receivers required by Section 25.208(o). Furthermore, as detailed in Coexistence Study I, NGSO user terminals would likely experience interference even at a very substantial distance from MVDDS transmitters. Assuming line-of-sight and free space loss, for example, an NGSO user terminal would experience interference at a distance of 11 kilometers or more from an MVDDS transmitter operating under the current EIRP limit of 14 dBm/24 MHz.

NGSO user terminals are especially susceptible to co-channel interference because they are receiving relatively weak signals from a distant satellite. As noted in Coexistence Study I, geographic separation between the two services could offer a workable solution, but would come at a considerable cost to spectrum efficiency. For example, if MVDDS deployments were limited to urban core areas only and NGSO user terminals were limited to rural operation only, sufficient geographic separation might exist to ensure reliable operation of both systems in the band; however, this arrangement would require the Commission to leave the 12.2-12.7 GHz band fallow of both NGSO and MVDDS uses across a substantial portion of the United States to provide sufficient separation between these two disparate and technically incompatible uses of the spectrum.

More fundamentally, OneWeb has requested access to 5,900 megahertz of U.S. spectrum without the submission of a usage study or any type of demand modeling. OneWeb has added that, of the 5,900 megahertz of spectrum requested, the company intends to use 2,000 megahertz of spectrum solely to support satellite-to-user links. Even if additional NGSO applicants materialize and seek access to the same satellite-to-user frequencies that OneWeb has sought, 2,000 megahertz represents a truly remarkable amount of spectrum for satellite-to-mobile user links, especially in the absence of any business or technical explanation of the need for this amount of NGSO capacity. OneWeb and other purported NGSO operators could provide meaningful service with access to substantially less than 2,000 megahertz of spectrum for satellite-to-user links, which would leave ample opportunity for MVDDS licensees to pursue terrestrial 5G deployments in the 12.2-12.7 GHz band.

⁶ Petition for Declaratory Ruling of OneWeb Ltd., IBFS File No. SAT-LOI-20160428-00041, at 5-6 (April 28, 2016).

- **The Coalition’s Proposal Will Allow for Future NGSO Operations**

The OneWeb request notwithstanding, Coalition also discussed generally why viable 5G services in the 12.2-12.7 GHz band require eliminating or designating as secondary the unused NGSO FSS allocation at 12.2-12.7 GHz, while maintaining the NGSO allocation in the adjacent 10.7-12.2 GHz band. MVDDS deployment has been deterred by Commission rules that restrict MVDDS operations to partially protect a currently non-existent and unknown operation that may or may not be launched in the future.

Still, as the Coalition explained, the proposed elimination or modification of the co-primary NGSO FSS allocation at 12.2-12.7 GHz will still preserve sufficient spectrum for future NGSO FSS operations, should demand for such operations develop. NGSO FSS operators will continue to have access to ample Ku-band spectrum on a primary basis, as further explained in the Coalition’s previous filings.⁷

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Respectfully submitted,

MVDDS 5G Coalition

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⁷ See Coalition PN Comments at 8.

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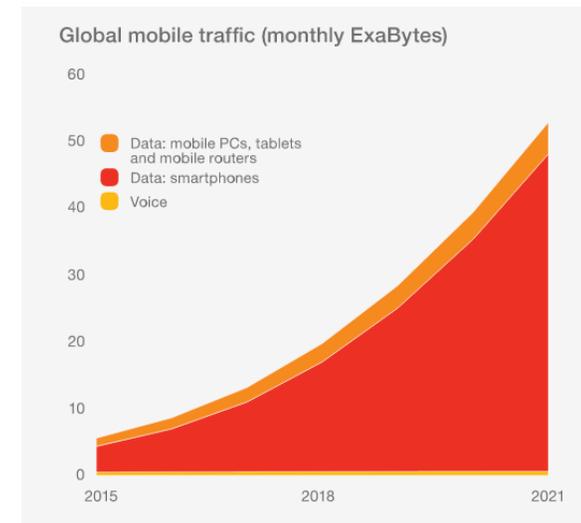
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Attachment: "Providing 5G Broadband Service at 12 GHz"

Providing 5G Broadband Service at 12 GHz

- Explosive consumer demand for mobile broadband has focused renewed attention on identifying additional spectrum for wireless broadband use
- The 12.2-12.7 GHz band offers an opportunity to make 500 MHz of contiguous spectrum available for 5G
- Detailed technical analysis shows how 5G could operate without causing harmful interference to incumbent DBS operators
- The MVDDS Coalition's petition for rulemaking asks the FCC to solicit public comment on three actions:
 - Retaining the same EPFD protection framework that DBS enjoys today;
 - Eliminating redundant DBS protections that needlessly constrain MVDDS operations; and
 - Eliminating the NGSO FSS allocation at 12.2-12.7 GHz.
- While satellite operators would prefer to retain the 12.2-12.7 GHz spectrum for future satellite operations, the Coalition petition has drawn support from terrestrial wireless operators, such as T-Mobile, CCA and CCIA, who want to see the FCC make more spectrum available for 5G
- Just as important, NGSO FSS/MVDDS coexistence is impossible under even the *existing* rules that MVDDS and NGSO FSS are supposed to observe. Under the existing rules:
 - Within a 10 km radii around the NGSO receiver, no MVDDS transmitter can be deployed (under 47 C.F.R. § 101.129(b)), which effectively under the recent application filed for NGSO mobile use makes the entire US an exclusion zone for MVDDS
 - The PFD protection required for an operational MVDDS receiver (under 47 C.F.R. § 25.208(o)) would substantially restrain NGSO operations
- The FCC has more than enough information to solicit comment on whether and under what conditions the 12.2-12.7 GHz band can support 5G operations



Source: Ericsson Mobility Report Q12016, <http://bit.ly/2aeAiGP>.

Providing 5G Broadband Service at 12 GHz

- In a series of decisions in the early 2000s, the FCC concluded that MVDDS licensees could share with DBS television receivers in the BSS allocation, but only subject to “exacting” limitations on MVDDS, including:
 - Restrictions (under 47 C.F.R. § 101.113(a)) that limit MVDDS effective isotropic radiated power (EIRP) to no more than 14 dBm per 24 MHz;
 - Requirements (under 47 C.F.R. § 101.105(a)(4)(ii)) that MVDDS licensees meet a schedule of stringent equivalent power flux density level (EPFD) levels, which vary by region of the United States; and
 - Requirements (under 47 C.F.R. § 101.1440(a)) that the MVDDS operator establish that the EPFD from its transmitting antenna will not exceed the applicable limit at all DBS customer-of-record locations prior to commencing MVDDS operations
- The FCC adopted these stringent limitations because the best technology available at the time could not identify adequate shielding from terrain obstacles and other impediments to consistently ensure the installed base of DBS receivers would not suffer harmful interference under more permissive MVDDS service rules than the FCC ultimately adopted
- In two technical studies filed June 8, 2016 and June 23, 2016, the Coalition employed new, ultra-high-resolution imagery of buildings and terrain to analyze the degree of attenuation to signal propagation that the most likely 5G use cases would experience in the 12.2-12.7 GHz band. The studies produced two key findings:
 - First, MVDDS licensees can deploy two-way 5G services in the 12.2-12.7 GHz band even with the current level of protection that DBS enjoys today from MVDDS licensees
 - Second, NGSO FSS cannot deploy in the 12.2-12.7 GHz band without substantial geographic separation from MVDDS base and mobile stations even under the existing MVDDS limitation and, as a practical matter, may not be able to deploy in the band at all



The Coalition's Coexistence Studies plotted 5G base stations (above) for common use cases and then modeled areas of excess EPFD (below).

